

LA-UR-12-27029

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Title: Off-Site Source Recovery Project Overview

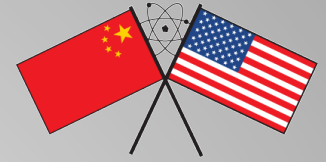
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Intended for: Presentation to Chinese Visitors



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GTRI OSRP Mission



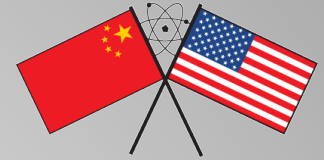
Remove to secure storage or disposal disused radiological sources that present a potential risk to security, health, or safety (priority agreed between NNSA and U.S. NRC)



Off-Site Source Recovery Project (OSRP)

- Every year, thousands of sources become disused and unwanted in the United States.
- While secure storage is a temporary measure, the longer sources remain disused or unwanted the chances increase that they will become unsecured or abandoned. Thus, permanent disposal is essential.
- To carry out its mission, GTRI, OSRP has the authority to acquire disused sealed sources in the interest of national security or public health and safety.
- OSRP primarily recovers Cs-137, Co-60, Sr-90, Am-241, Pu-238, Pu-239
 - Every potential recovery is different and must be considered and prioritized. In coordination with NRC, has developed a recovery prioritization criteria based on threat reduction mission Criteria includes activity, isotope, location, vulnerability
 - Different Types of Recoveries
 - Transuranics, Low activity (less than 10 Ci) beta/gamma sources without commercial disposal and High activity beta gamma devices
 - GTRI partners with CRCPD on the Source Collection and Threat Reduction (SCATR) project which works with state regulators and licensees to round up sources with commercial disposal pathways





GTRI/OSRP Recoveries

Basic Recovery Steps

Register via GTRI OSRP website osrp.lanl.gov

Outreach to those with registered sources and comprehensive update of database completed in October/November 2008

Review prioritization criteria

GTRI, in coordination with NRC, has developed a recovery prioritization criteria based on threat reduction mission

Criteria includes activity, isotope, location, vulnerability

Consider logistical options and impediments

Availability of transport containers

Disposal options

Proximity to sites with scheduled recoveries (round-ups)

Select Best Path Forward

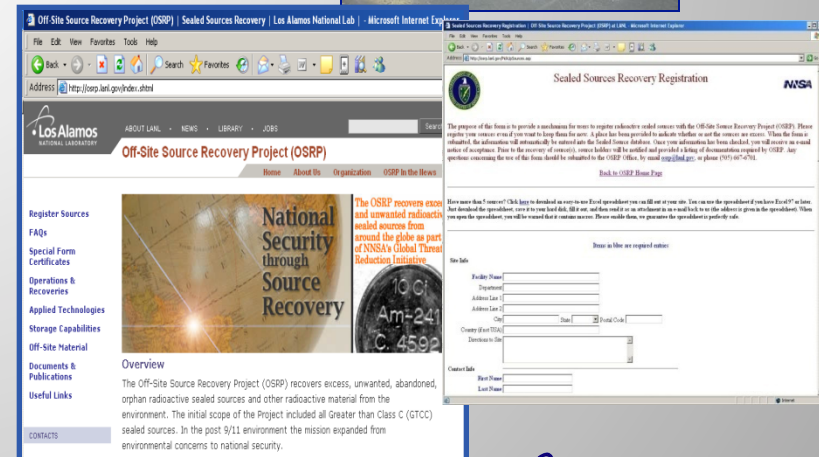
CRCPD's SCATR Project

Small beta/gamma w/o commercial disposal

Self-ship

Transuranics

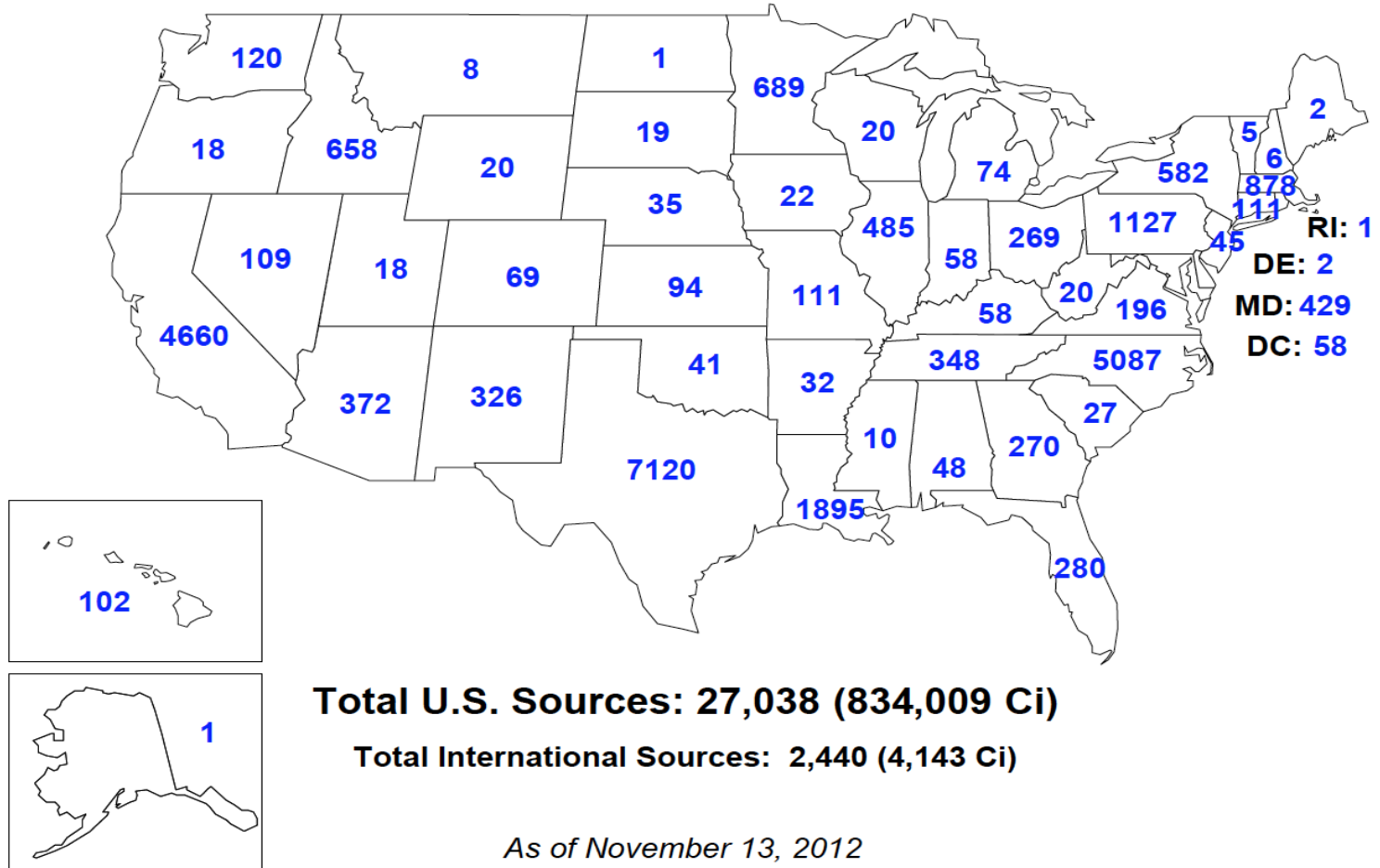
Large beta/gamma devices





OSRP Recoveries in the U.S.

OSRP Sources Recovered



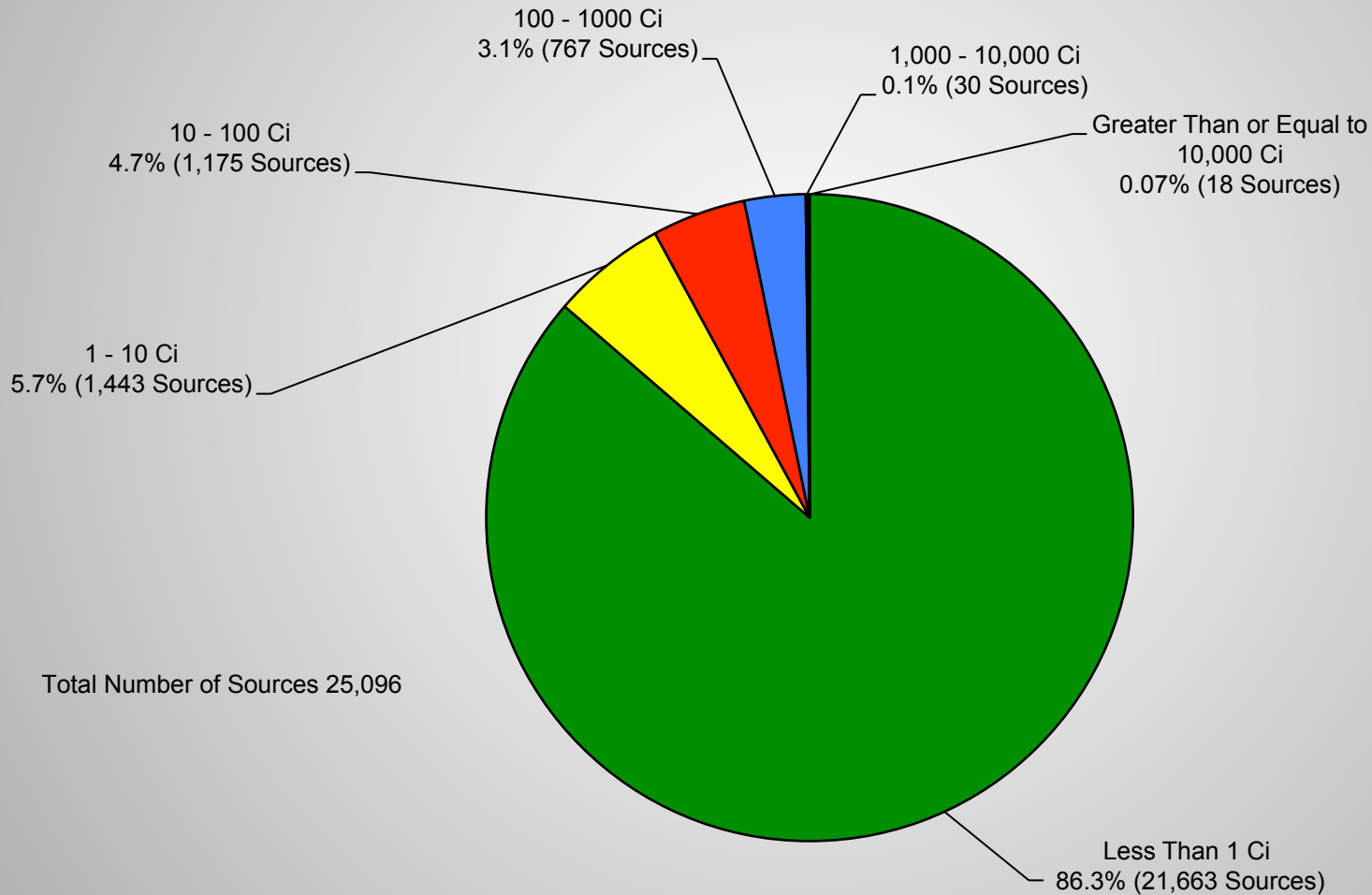
GTRI-OSRP International Recoveries



Country	Number of Sources	Total Decayed Activity
Argentina	19	36
Australia	207	52
Brazil	1000	294
Canada	3	3
Chile	431	22
Denmark	11	44
Ecuador	36	8
France	44	125
Germany	48	14
India	23	61
Israel	7	31
Italy	11	1202
Peru	486	60
Singapore	1	0
South Africa	69	23
Sweden	9	20
Switzerland	5	16
Uruguay	30	2112
Total	2,440	4,123

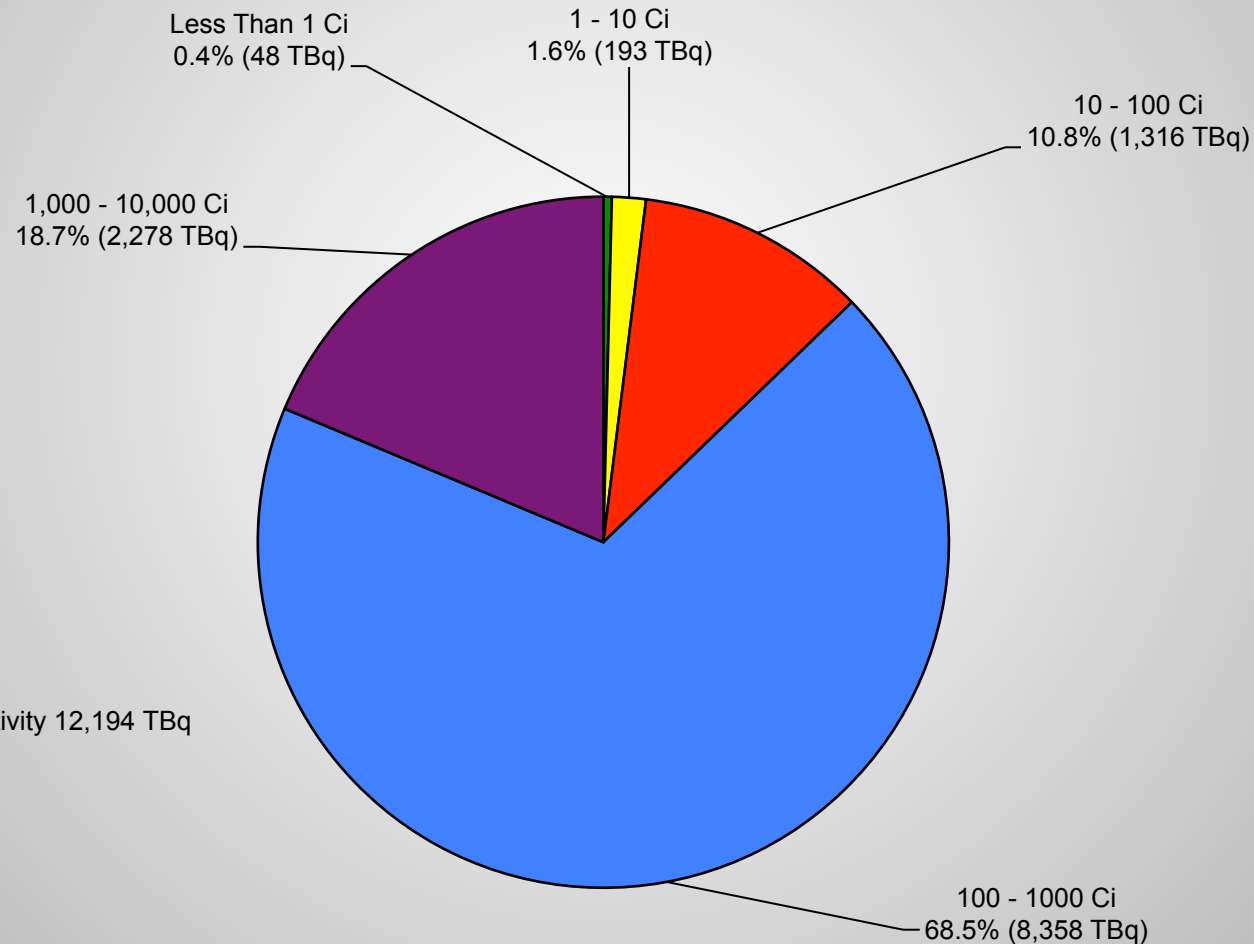


**Sources Registered as Disused and Unwanted
On GTRI/OSRP Database,
November 8th, 2012**





**Decayed Activity of Disused and Unwanted
On GTRI/OSRP Database,
November 8th, 2012**





Key Sealed Source Disposal Challenges

- There are two primary challenges:
 1. Lack of commercial disposal options for high-activity beta/gamma sources (primarily cobalt-60, cesium-137 and strontium-90)
 2. Lack of near-term disposal capability for US-licensed sealed sources containing foreign-origin americium-241



Issues

Regulatory Changes

- Many Type B packages were designed several decades ago and do not meet new international standards. In a January 2004 rulemaking, NRC adopted revised regulations to harmonize with the 1996 edition of the IAEA regulations.
 - Packages that match IAEA regulations only fit a small number of devices (<10%) and are expensive to use due to limited availability.
- Type B packages did not have to meet the new design standards until October 1, 2008. After this date, many of the existing Type B packages could no longer be used.
- In the United States, the Department of Transportation (DOT) issued special permits to companies for continued issue of noncompliant DOT Specification 20WC and 6M containers. The last one expired June 2012.
- Because industry needs Type B packages to ship new devices, it was believed that industry would develop new packages that would meet the new design standards.
- By 2009, it was clear industry was not developing new general-use packages but rather relying on device-specific packages certified to accommodate only those devices they were currently distributing.

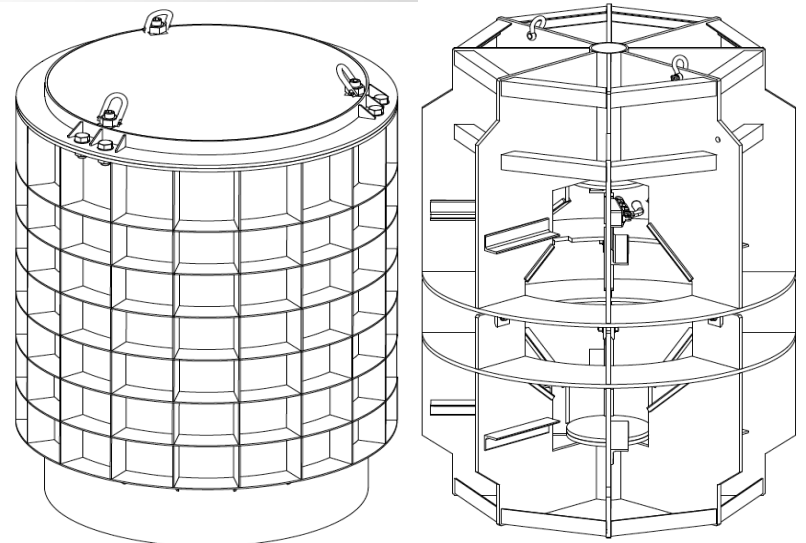
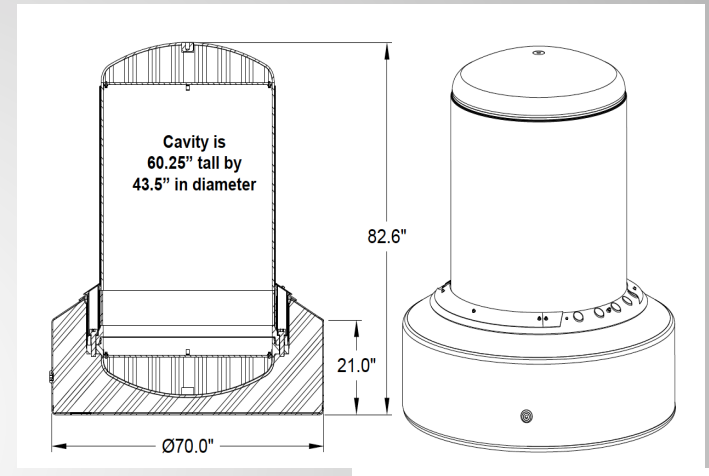


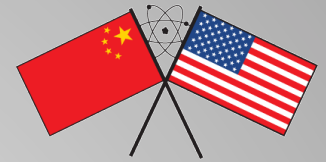
- DOT has rejected all requests for special permit extensions for the DOT Specification 20WC containers.
- Most GTRI/OSRP recoveries (~80%) involving Type B quantities of Cs-137 or Co-60 have been completed using the expired DOT Specification 20WC containers that are no longer available for use to ship.
- GTRI/OSRP has a backlog of about 130 excess and unwanted sources/devices that must be shipped in Type B containers.
- Type B packages that meet the new standards are expensive to lease (\$200,000 for two weeks use of the GE 2000) or buy (\$2.5M for the 10-160B), and are available only in limited quantities or are in high demand, making availability uncertain.
- Other limitations include weight or volume restrictions, payload activity limits too low, restrictions on form of materials



435 B Design

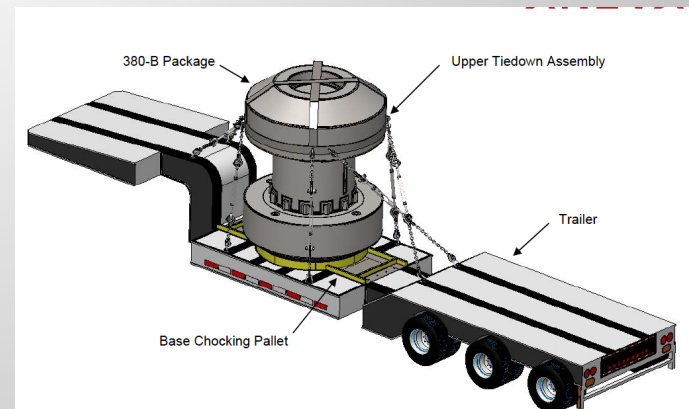
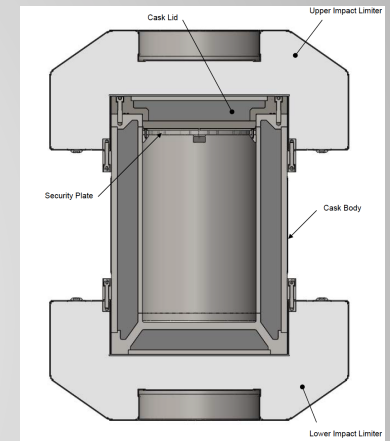
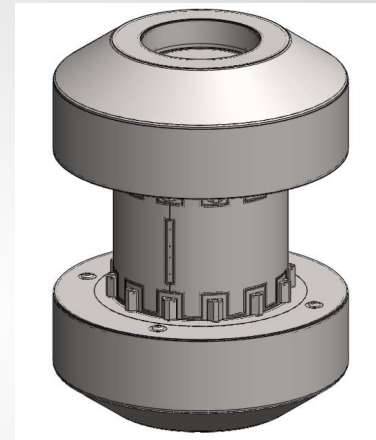
- External construction based on previously certified container
- Design parameters:
 - IAEA LTSS – custom lodgement
 - Shielded devices w/ Cs-137 or Co-60 – internal container – max weight 1,590 Kg
 - LTSS Cs, Sr, Ir, Se Ra, Am Pu and small neutron sources
 - Approx 480 TBq Co-60, 200 W
 - Leaktight – NCT and HAC
 - Transport by truck, rail, ship, air
 - External dimensions 209 cm H x 179 cm OD
 - Internal Cavity 152 cm H x 110 cm in ID
 - Empty weight 2,225 Kg, total weight 4,535 Kg





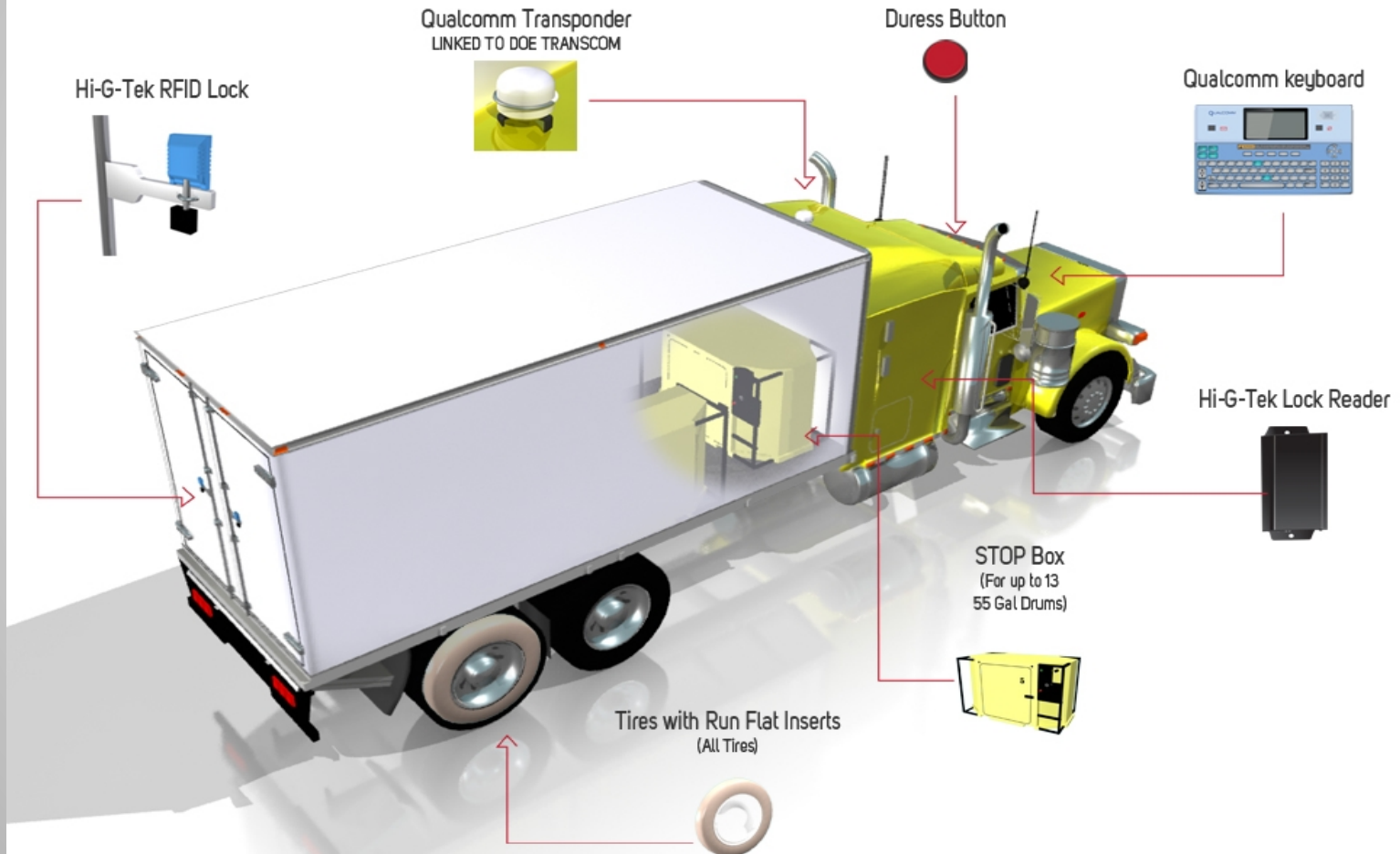
380 B Design

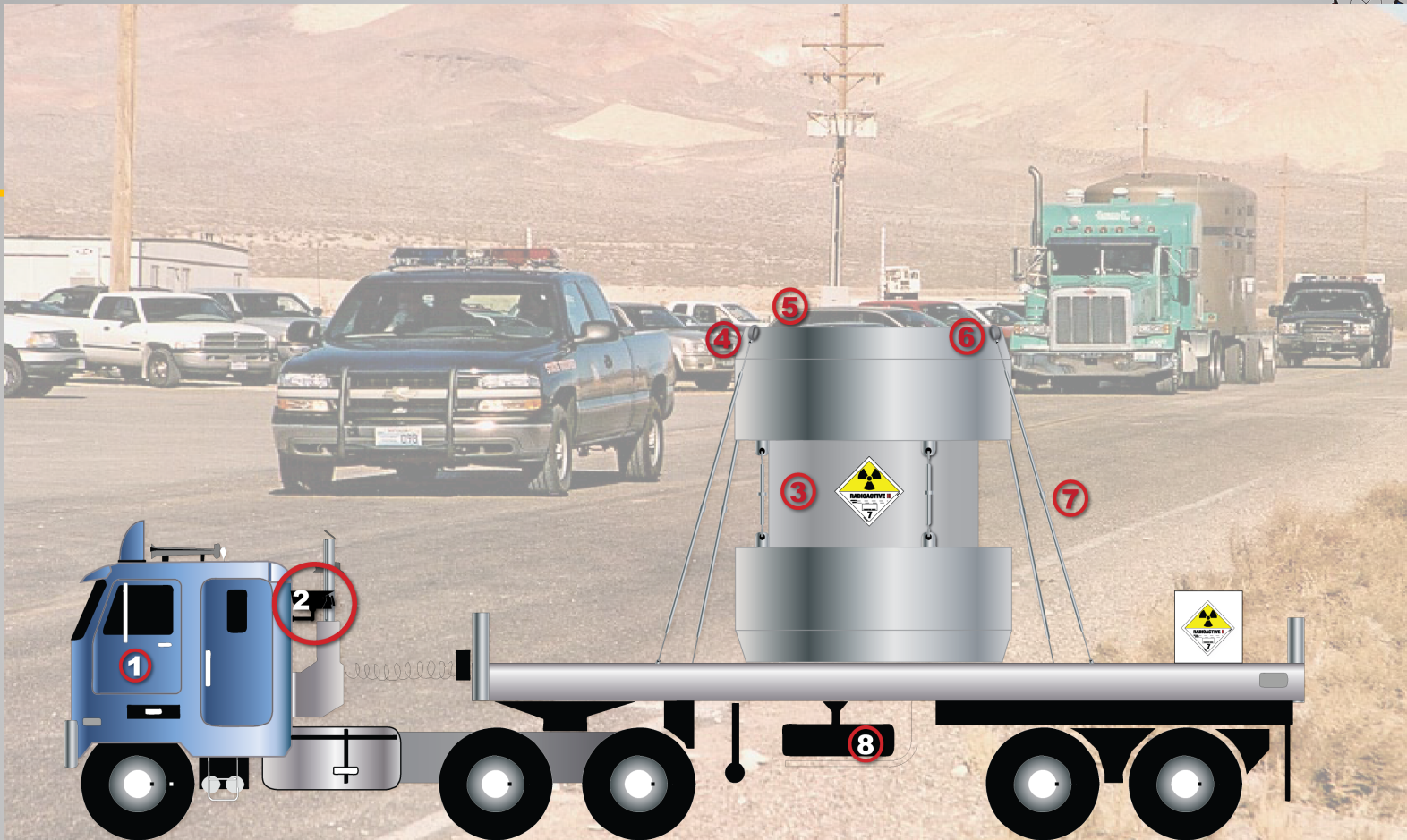
- Design parameters:
 - Payload weight 4,535 Kg
 - Co, Cs, Sr, Ir, Ra Am Pu and Depleted Uranium
 - Approximately 275 TBq Co-60
 - Leak tight – NCT and HAC
 - Transport by truck, rail, ship, air
 - External dimensions 330 cm H x 254 cm OD
 - Internal Cavity 162 cm H x 113 cm ID
 - Empty weight 35,835 Kg





Security Technology Installed on the OSRP Truck





- 1** Control:
- Driver Identification
 - Redundant Communications
 - Package Tracking
- 2** External Video Monitoring of Load

- 3** Communications Package:
- Located On Trailer and/or Container
 - Five Minute Status Reporting Time
 - Battery Backup Power
- 4** Delay:
- Driver Control King Pin Lock
 - Cutting Delay Inherit in Container Design
 - Blast Resistance Inherit in Container Design
 - Ballistic Protection Inherit in Container Design

- 5** Tamper Resistant Bolts for Lid, Impact Limiters, and Connections
- 6** Tamper Indicating Seals (Container & Tie Downs)
- 7** Tie Downs of High Strength Alloys
- 8** Spare Wheels & Assemblies